

# **Indirect Effect of Hopelessness on Depression Symptoms Through Perceived Burdensomeness**

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## **Abstract**

Hopelessness theory of depression posits that hopelessness due to negative inferences may serve as a proximal and sufficient cause of depression, while interpersonal theories suggest that interpersonal stress resulting from relationship problems and social rejection may lead to symptoms of depression. We propose that the two perspectives can be integrated by examining a model in which hopelessness predicts depression symptoms through two specific interpersonal stress constructs, thwarted belongingness and perceived burdensomeness, in a sample of university students from Macau (N=350). Results of mediation analysis revealed a significant indirect effect of hopelessness on depression symptoms through perceived burdensomeness (indirect effect=.45; 95% confidence interval=.28 to .65), but not thwarted belongingness (indirect effect=.06; 95% confidence interval=-.05 to .18). Alternative models were also tested. When each interpersonal construct was treated as a separate mediator without controlling for the other, significant indirect effects of both perceived burdensomeness and thwarted belongingness were found. Moreover, when hopelessness was assigned as the mediator and interpersonal constructs as independent variables, significant indirect effects were likewise found for perceived burdensomeness and thwarted belongingness. Findings suggest that the two different yet compatible views about depression—hopelessness and interpersonal theories—may be integrated to provide a better understanding of the process of how depression symptoms occur. It also reinforces the importance of considering interpersonal factors in the study of depression, especially in societies where interpersonal relationships are highly valued.

## **Keywords**

Hopelessness, interpersonal stress, perceived burdensomeness, depression symptoms

## Introduction

As university students are vulnerable to experience stressful situations such as problems involving academics, social relationships, finances, and the need to make important life decisions, the risk of mental health problems such as depression increases (Chen et al., 2013). Indeed, the rate of depression among university students is substantially higher than that of the general population (Ibrahim, Kelly, Adams, & Glazebrook, 2013), and among Chinese students, the prevalence of depression is even greater among those who are older, have low socioeconomic status, have poor relationship with parents, whose mothers have lower educational attainment, and those who are not satisfied with their majors (Chen et al., 2013). Thus, there is a need for a better understanding of the processes involved in depression in this population.

The hopelessness theory of depression (Abramson, Metalsky, & Alloy, 1989) provides an explanation for the development of a hopelessness subtype of depression. It posits that three types of inferences might ensue when an individual experiences negative life events: (1) that the cause of the negative life event is stable and global; (2) that the consequences of the negative life event are highly important, not remediable, unchangeable, and could largely affect one's life; and (3) that the negative characteristics of the self in relation to the event are unalterable and could hinder the achievement of other important life goals. These inferences could lead to hopelessness, which is a proximal and sufficient cause of depression (Abramson et al., 1989).

The hopelessness theory of depression has been widely supported in the literature. Iacoviello, Alloy, Abramson, Choi, and Morgan (2013) demonstrated the relationships between hopelessness, depression, and other related variables as the hopelessness theory predicted. Furthermore, a number of studies have shown the association between hopelessness as a set of cognitive schemas focused on negative outlook or expectations about the future (Beck, Weissman, Lester, & Trexler, 1974) and depression in diverse samples, including persons with disabilities and their parents (Singh, Kaur, & Srivastava, 2017), patients diagnosed with clinical depression (Sharma & Sinha, 2016), cancer patients and their family caregivers (Han et al., 2013), and adolescents and young adults (Waszczuk, Coulson, Gregory, & Eley, 2016). There was strong evidence that hopelessness, as a cognitive vulnerability factor, provided unique contribution to the development of depression (Marchetti, Loeys, Allon, & Koster, 2016).

Interpersonal theories of depression (see review by Hames, Hagan, & Joiner, 2013) provide a different, yet not contradictory view of depression. These interpersonal theories highlight the crucial role of interpersonal processes in the onset, maintenance, and recurrence of depression symptoms. It posits that certain behavioral features and communication patterns (e.g., too much focus on negative topics during conversations; unsolicited self-disclosure of negative feelings and experiences during socially inappropriate occasions; excessive reassurance seeking; and negative feedback seeking) (Joiner, Alfano, & Metalsky, 1992; Pettit & Joiner, 2001; Segrin, 2000) are common among individuals with depression. These behaviors contribute to relationship problems and social rejection, and the resulting interpersonal stress exacerbates the symptoms of depression (Hames et al., 2013).

Indeed, interpersonal problems in various relationship contexts have been associated with depression symptoms. Poor relationship quality, conflict, and lack of cohesion and expressiveness in the family were found to predict depression symptoms (Queen, Stewart, Ehrenreich-May, & Pincus, 2013). Likewise, rejection by peers and lack of satisfaction in romantic relationships increase one's vulnerability to depression (Platt, Kadosh, & Lau, 2013; Whitton & Kuryluk, 2012). Moreover, interpersonal stress has been found to be a crucial factor in identifying students who are at risk of depression (Coiro, Bettis, & Compas, 2017).

Joiner, Wingate, and Otamendi (2005b) suggested that the two perspectives can be integrated. They expounded the hopelessness theory by adding an interpersonal component to it. Consistent with the stress generation model (Hammen, 1991) that stipulates the role of depressed individuals in generating their own negative life stress, it was proposed that one's hopelessness could be accountable for the generation of interpersonal stress, which could lead to depression (Joiner et al., 2005b). Support for this contention has been found in a sample of undergraduate students. Hopelessness predicted prospective depression through self-reported negative interpersonal life events (Joiner et al., 2005b). Further evidence for this was provided as hopelessness accounted for not only perceived but even actual negative interpersonal events reported by the roommates of the target participants (Joiner, Wingate, Gencoz, & Gencoz, 2005a).

The integration of an interpersonal component to the hopelessness theory would suggest that as one experiences a negative life event and interprets it as due to a stable cause, could lead to negative consequences, or reflective of one's negative characteristics, hopelessness might ensue (Abramson et al., 1989); and this hopelessness could contribute to depression through interpersonal stress. In the context of university students, negative life events most likely involve academic, social, financial, or life decision problems (Chen et al., 2013). As one becomes hopeless, he or she may behave in ways that could be detrimental to one's relationships with others, such as excessively seeking for reassurance or negative feedback. The interpersonal stress brought by the resulting relationship problems could then contribute to depression symptoms (Hames et al., 2013).

In line with this notion, we examine whether two specific constructs of interpersonal stress—thwarted belongingness and perceived burdensomeness—would mediate the relationship between hopelessness and depression symptoms. Thwarted belongingness and perceived burdensomeness have been widely investigated in the context of suicide (Van Orden, Cukrowicz, Witte, & Joiner, 2012; Van Orden, Witte, Gordon, Bender, & Joiner, 2008; Zaroff, Wong, Ku, & Van Schalkwyk, 2014) and were found to be associated with depression in a number of studies (e.g., Davidson, Wingate, Grant, Judah, & Mills, 2011; Hames et al., 2013).

Thwarted belongingness is characterized by feelings of loneliness and social isolation that an individual experiences when one's need for social connectedness is not fulfilled (Van Orden et al., 2010). The associations of feelings of loneliness and social isolation with depression have been demonstrated in the literature (Matthews et al., 2016; Teo, 2013; Witvliet, Brendgen, Van Lier, Koot, & Vitaro, 2010). Moreover, it was found that being rejected or socially excluded increases the likelihood that one will become depressed (Malone, Pillow, & Osman, 2012).

Perceived burdensomeness refers to the perception that an individual is a burden to others, and that others would be better off without him or her. It is characterized by beliefs of being a liability and feelings of self-hatred. Individuals in situations where one may feel unwanted or expendable, such as family conflict, unemployment, and physical illness, are particularly likely to perceive themselves as being a burden to others (Van Orden et al., 2010). It is noted that similar situations are also considered to be risk factors for depression (Cohen et al., 2015; Mossakowski, 2009; Moussavi et al., 2007).

We propose that hopelessness would be associated with depression symptoms through thwarted belongingness and perceived burdensomeness in a sample of university students from Macau. Examining this hypothesis could help clarify the role of an interpersonal component within the context of the hopelessness theory of depression. This can be particularly helpful in explaining the processes involved in the occurrence of depression symptoms, especially in collectivist Chinese societies, where interpersonal relationships are greatly valued (Zhang, Gong, & Ungar, 2013).

## Method

### Participants and procedures

A convenience sample of 350 university students from Macau participated in the study. The mean age of participants was 21 years ( $SD=3$ ); 163 (46.6%) were males, 185 (52.8%) were females, and 2 (0.6%) did not report their gender. In terms of relationship status, 111 (31.7%) reported currently being involved in a serious relationship. With regard to employment status, 93 (26.6%) are working at least part time.

The data were collected using self-report measures completed by the participants within the university campus. All the participants gave their informed consent prior to the conduct of the study. All applicable ethical guidelines in the conduct of research with human participants were strictly followed during the course of the study, and Ethical Committee approval was sought and received where necessary.

### Measures

*Beck Hopelessness Scale.* The level of hopelessness was measured using Beck Hopelessness Scale (BHS; Beck et al., 1974). BHS is a 20-item scale that measures overall hopelessness, including one's expectations, loss of motivation, and feelings about the future. Participants responded to positively (e.g., "I look forward to the future with hope and enthusiasm.") and negatively worded statements (e.g., "I might as well give up because there is nothing I can do about making things better for myself.") with either true or false. BHS is commonly used in studies that test the hopelessness theory of depression (e.g., Waszczuk et al., 2016; Xiao et al., 2016).

*Interpersonal Needs Questionnaire.* The participants' interpersonal stress was measured using the Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2012). INQ has five items that measure thwarted belongingness (e.g., "These days, I feel disconnected from other people.") and seven items that assess perceived burdensomeness (e.g., "These days the people in my life would be better off if I were gone."). The participants rated the items on a seven-point Likert-type scale (1=not at all true for me; 7=very true for me).

*Beck Depression Inventory-II.* Depression symptoms were assessed using the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). BDI-II is composed of 21 statements that correspond to symptoms of depression severity from which participants pick out one in each group that best describes the way they have been feeling in the past two weeks.

All the measures used demonstrated adequate reliability based on the current data (see Table 1). The INQ was translated to Chinese characters using backtranslation procedures by the Translation Department at the University of Macau. Chinese character versions of BHS and BDI were created by a vendor licensed by the original publisher.

### Data analysis

To test the hypothesis wherein interpersonal stress (thwarted belongingness and perceived burdensomeness) mediates the relationship between hopelessness and depression symptoms, parallel multiple mediation analysis was conducted. Hopelessness was entered as the independent variable, depression symptoms as the outcome variable, and thwarted belongingness and perceived burdensomeness as mediators.

To further clarify the relationships among the independent and mediating variables, we also tested alternative models. In alternative models A and B, the mediation of each

interpersonal construct was tested separately. In model A, hopelessness predicts depression symptoms through perceived burdensomeness, while in model B, hopelessness predicts depression symptoms through thwarted belongingness.

The interpersonal theory of suicide postulates that the presence of thwarted belongingness and perceived burdensomeness, and one's hopelessness about these states, make one more likely to actively desire and think about suicide (Van Orden et al., 2010). The acute role of hopelessness in suicide risk is further supported, as it was found to moderate the relationship between interpersonal stress and suicide (Hagan, Podlogar, Chu, & Joiner, 2015). To test whether a more proximal role of hopelessness would apply to depression symptoms, we examined alternative models C and D in which interpersonal stress predicts depression symptoms through hopelessness. In model C, perceived burdensomeness (with thwarted belongingness as covariate) predicts depression symptoms through hopelessness, while in model D, thwarted belongingness (with perceived burdensomeness as covariate) predicts depression symptoms through hopelessness. PROCESS SPSS Macro (Hayes, 2012) was used in data analysis, following the procedures documented in Hayes (2013).

## Results

### Descriptive statistics

The reliability, means, standard deviations, and correlations of the study variables are shown in Table 1. Hopelessness, thwarted belongingness, perceived burdensomeness, and depression symptoms all significantly and positively correlated with each other. It can be noted that the correlation between thwarted belongingness and perceived burdensomeness ( $r = .44$ ,  $p < .01$ ) is lower than is typically seen in previous studies ( $r = .57$ ,  $p < .01$ ; according to a meta-analytic study by Chu et al., 2017). It is possible that these two constructs were viewed as more distinct by the current sample, considering that the data came from students from a collectivist Chinese society, which places great value on interpersonal relationships (Zhang et al., 2013).

### Mediation analysis of relationship of hopelessness and depression symptoms through interpersonal stress

The results of mediation analysis are presented in Figure 1 and Table 2. Significant indirect effect of hopelessness on depression symptoms through perceived burdensomeness (indirect effect  $= .45$ ; 95% confidence interval (CI)  $= .28$  to  $.65$ ), but not thwarted belongingness (indirect effect  $= .06$ ; 95% CI  $= -.05$  to  $.18$ ), was found. This indicates that higher level of hopelessness was associated with greater perceived burdensomeness, which in turn, was related to more severe symptoms of depression.

### Mediation analyses of alternative models

The results of mediation analyses of the alternative models are shown in Table 3. It can be noted that aside from the hypothesized model, other models with significant indirect effects were also found. When each interpersonal construct was treated as a separate mediator without controlling for the other (models A and B), significant indirect effects of both perceived burdensomeness and thwarted belongingness were found (indirect effect  $= .47$ ; 95% CI  $= .31$  to  $.67$  and indirect effect  $= .15$ ; 95% CI  $= .04$  to  $.29$ , respectively). When hopelessness was assigned as the mediator and interpersonal stress constructs as independent variables (models C and D), significant indirect effects were likewise found for perceived burdensomeness (indirect effect  $= .15$ ; 95% CI  $= .09$  to  $.23$ ) and thwarted belongingness (indirect effect  $= .11$ ; 95% CI  $= .06$  to  $.18$ ).

## Discussion

The study aimed to examine whether hopelessness would predict depression symptoms through interpersonal stress constructs of thwarted belongingness and perceived burdensomeness. The hypothesis was partly supported as significant indirect effect was found between hopelessness and depression symptoms through perceived burdensomeness, but not thwarted belongingness. Whereas both thwarted belongingness and perceived burdensomeness were found to correlate with depression symptoms, it seems that perceived burdensomeness is a stronger interpersonal mediator for negative outcomes when viewed from the perspective of hopelessness theory (Kleiman, Law, & Anestis, 2014).

The finding that hopelessness was related to depression symptoms through perceived burdensomeness is consistent with Joiner et al.'s (2005b) contention that hopelessness could lead to increased depressive symptoms through the generation of interpersonal stress. Hopelessness, which is characterized by negative cognitions regarding the nonoccurrence of a highly valued outcome and helplessness in changing the likelihood that these outcomes would occur (Abramson et al., 1989), may contribute to one's perception of being a liability. The perception of being a liability to oneself or to others may make one feel unwanted and dispensable and, thus, a burden to others (Van Orden et al., 2010). Moreover, a hopeless individual may have beliefs regarding one's unchangeable negative characteristics that keep him or her from achieving a desired outcome (Abramson et al., 1989). This negative view of the self may lower one's self-esteem and instigate self-blame and feelings of shame. This could contribute to feelings of self-hatred, which is another dimension of perceived burdensomeness (Van Orden et al., 2010). The increase in the perception of being a burden to others may then contribute to symptoms of depression (e.g., Davidson et al., 2011; Hames et al., 2013).

It is also possible that hopelessness may lead an individual to become embittered and stifled, which may evoke others to perceive him or her negatively. This, in turn, may result to others communicating with the individual in a distressing and critical manner (Hooley & Teasdale, 1989; Joiner et al., 2005b). Such communications could increase the individual's feelings of social rejection and, thus, may heighten one's perception of being a burden to others, which could contribute to symptoms of depression (Davidson et al., 2011; Hames et al., 2013).

The examination of alternative models provided further understanding on the relationships of hopelessness and interpersonal stress constructs as predictors of depression symptoms. When treated as a separate mediator, significant indirect effect of hopelessness on depression symptoms through perceived burdensomeness was also found (model A). However, significant indirect effect through thwarted belongingness was only present when perceived burdensomeness was not taken into account in the model (model B). This supports the notion of perceived burdensomeness as a stronger and more consistent interpersonal mediator than thwarted belongingness for negative outcomes (Kleiman et al., 2014). Reversing the roles of hopelessness and interpersonal stress constructs as independent and mediating variables also yielded significant indirect effects (models C and D). The significant indirect effects of thwarted belongingness and perceived burdensomeness on depression symptoms through hopelessness supports the acute role of hopelessness in determining negative outcomes (e.g., suicide) and is consistent with the prediction of the interpersonal theory of suicide. Indeed, it was found that the interaction between perceived burdensomeness and thwarted belongingness predicted suicidal risk, especially at high levels of hopelessness (Hagan et al., 2015).

The findings have some important implications. Theoretically, it provides evidence that the two perspectives—hopelessness theory and interpersonal models of depression—can be integrated to provide a better understanding of how depression symptoms occur. This information can also be useful in designing interventions for university students who are at

risk of depression. It suggests that both cognitive and interpersonal interventions may be incorporated in addressing symptoms of depression.

The findings of the study must be viewed in light of its limitations. First, all data were gathered using self-report measures. Second, the study made use of the cross-sectional design, and thus, causal relationships cannot be inferred. While the study tested a specific direction of how hopelessness, interpersonal stress (i.e., thwarted belongingness and perceived burdensomeness), and depression symptoms are associated with each other, bidirectional relationships were found and supported upon examination of the alternative models. It is suggested that longitudinal studies be conducted in the future to clarify the temporal nature of the relationships of the variables in the study. Third, the study specifically focused on the integration of interpersonal component to the hopelessness subtype of depression, which is a theory-based subtype of depression that views it as a result of hopelessness due to inferences of negative consequences and self-characteristics; thus, we cannot claim its compatibility with other theoretical formulations of depression. Finally, the participants of the study are university students from a society where interpersonal relationships are highly valued; thus, the results may not generalize to other populations. Nonetheless, the study may provide valuable contribution to the literature on depression. It demonstrates how two different yet compatible views of depression—hopelessness and interpersonal theories—can be combined to provide a more complete understanding of the processes involved in the occurrence of depression symptoms. It also highlights the importance of considering interpersonal factors in the study of depression, especially in societies where interpersonal relationships are highly valued.

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Table 1. Reliability, means, standard deviations, and correlations.

	<b><i>α</i></b>	<b>Mean</b>	<b><i>SD</i></b>	<b>1</b>	<b>2</b>	<b>3</b>
1. Hopelessness	.77	3.75	3.16	--		
2. Thwarted belongingness	.76	15.56	5.73	.48**	--	
3. Perceived burdensomeness	.85	15.16	6.49	.56**	.44**	--
4. Depression symptoms	.87	9.53	7.14	.55**	.37**	.56**

Note: *SD*: standard deviation.

\*\* $p < .01$ .

Table 2. Results of mediation analysis of relationship of hopelessness and depression symptoms through interpersonal stress.

A. Direct effects		Outcome				
Independent variable	Thwarted belongingness		Perceived burdensomeness		Depression symptoms	
	<i>B</i>	<i>R</i> <sup>2</sup>	<i>B</i>	<i>R</i> <sup>2</sup>	<i>B</i>	<i>R</i> <sup>2</sup>
Hopelessness	.86 (.09)**	.23**	1.16 (.12)**	.32**	.72 (.15)**	.40**
Thwarted belongingness					.07 (.07)	
Perceived burdensomeness					.39 (.07)**	
B. Indirect effects						
Independent variable	Mediator	Indirect effect	BC 95% CI			
			LL	UL		
Hopelessness	Thwarted belongingness	.06 (.06)	-.05	.18		
Hopelessness	Perceived burdensomeness	<b>.45</b> (.09)	.28	.65		

Note: Bootstrap was performed to 5000 resamples. Boldface value indicates significant indirect effect; all coefficients are unstandardized; standard errors are in parentheses; total effect model  $R^2 = .30$ ,  $p < .01$ . CI: confidence interval; BC: bias-corrected; LL: lower limit; UL: upper limit.

\*\* $p < .01$ .

Table 3. Results of mediation analyses of alternative models.

Model	Direct effect	Indirect effect	BC 95% CI	
			LL	UL
A	.76 (.14)**	<b>.47</b> (.09)	.31	.67
B	1.09 (.15)**	<b>.15</b> (.06)	.04	.29
C	.39 (.07)**	<b>.15</b> (.04)	.09	.23
D	.07 (.07)	<b>.11</b> (.03)	.06	.18

Note: Model A: hopelessness → perceived burdensomeness → depression symptoms (total effect model  $R^2 = .30$ ); model B: hopelessness → thwarted belongingness → depression symptoms (total effect model  $R^2 = .30$ ); model C: perceived burdensomeness (covariate: thwarted belongingness) → hopelessness → depression symptoms (total effect model  $R^2 = .33$ ); model D: thwarted belongingness (covariate: perceived burdensomeness) → hopelessness → depression symptoms (total effect model  $R^2 = .33$ ); bootstrap was performed to 5000 resamples. Boldface values indicate significant indirect effect; all coefficients are unstandardized; standard errors are in parentheses. CI: confidence interval; BC: bias-corrected; LL: lower limit; UL: upper limit.

\*\* $p < .01$ .

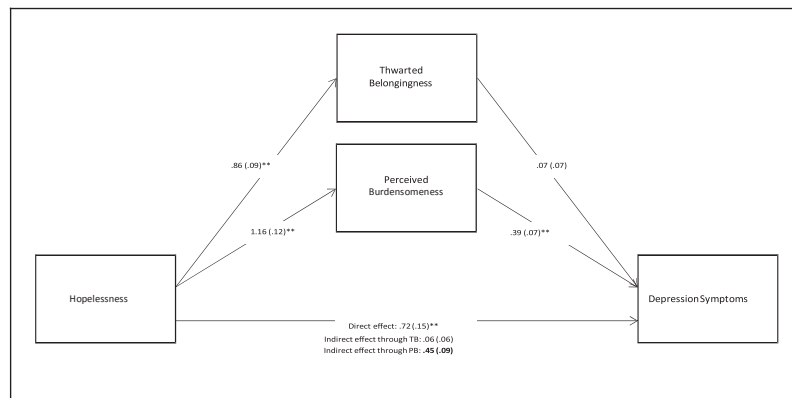


Figure 1. Mediation analysis of relationship of hopelessness and depression symptoms through interpersonal stress. Bootstrap was performed to 5000 resamples. Boldface value indicates significant indirect effect; all coefficients are unstandardized; standard errors are in parentheses. TB: thwarted belongingness; PB: perceived burdensomeness.  $**p < .01$ .

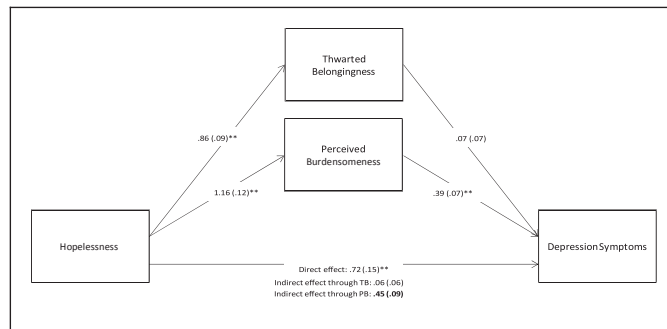


Figure 1. Mediation analysis of relationship of hopelessness and depression symptoms through interpersonal stress. Bootstrap was performed to 5000 resamples. Boldface value indicates significant indirect effect; all coefficients are unstandardized; standard errors are in parentheses. TB: thwarted belongingness; PB: perceived burdensomeness.  $**p < .01$ .



